

Docket No. 968-20-006

PATENT

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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of Zinc Matrix Power, Inc.

Filed: herewith

Art Unit: unknown #2

Serial No. unknown

Examiner: unknown

For: SILVER-ZINC ALKALINE RECHARGEABLE BATTERY (STACKING ORDER)

**TRANSMITTAL OF INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR 1.56**

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

Sir:

In accordance with the duty of disclosure requested by 37 CFR 1.56, Applicant submits an Information Disclosure Statement and a copy of each referenced cited in Information Disclosure Statement.

Discussion of the references.

Colburn in U.S. Patent No. 6,153,328 describes a metal/air fuel cell which contains dendrite elimination zones characterized by the substantial lack of zinc in the volume of the zone and substantial presence of a cell positive electrode through the volume.

Lian et al in U.S. Patent No. 5,830,601 teach an electrolyte active species comprising a metal hydroxide such as KOH or NaOH, and a modifier such as a metal porphine, and/or polyvinyl resin such as polyvinyl alcohol or polyvinyl acetate.

Kawakami, et al in U.S. Patent No. 5,824,434 use a multi-layered oxide film next to the zinc.

U.S. Patent No. 5,681,672 by Lee teaches barium fluoride in the electrolyte solution as a remedy for zinc dendrites.

Adler, et al in U.S. Patent No. 5,302,475 use an electrolyte containing KOH and a combination of KF and K<sub>2</sub>CO<sub>3</sub> salts.

Ando in U.S. Patent No. 4,479,856 includes a quaternary ammonium salt and at least two metal ions selected from the group consisting of lead, tin and cadmium ions as dendrite inhibitor added to the electrolyte.

U.S. Patent No. 5,780,186 by Casey Jr. discloses a specially treated zinc that fills the pores of a porous metal substrate.

The use of indium sulphate as a coating agent for zinc is disclosed in U.S. Patent No. 5,626,988 by Daniel-Ivad, et al.

U.S. Patent Nos. 4,154,912 and 4,272,470 disclose crosslinking of polyvinyl alcohol by acetalization which supposedly forms networks between polymer molecules, thereby impeding zinc migration.

In U.S. Patent No. 6,033,806, Sugiura, et al discuss a similar crosslinked polyvinyl alcohol separator formed by adding an oxidizing agent to effect oxidative cleavage of 1,2-diol units and then acetalizing to form a film of crosslinked polyvinyl alcohol.

Pemslar, et al in U.S. Patent No. 4,592,973 disclose a separator with a hydrophobic, microporous membrane whose pores are filled with a liquid transport agent comprising an organic agent dissolved in an organic solvent.

A zinc-dendrite resistant separator made from copolymers of ethylene and acrylic or methacrylic acid is disclosed in U.S. Patent No. 4,434,215 by Wszolek, et al.

Shibley et al disclose in U.S. Patent No. 4,371,596 a separator made from a porous, flexible substrate coated with an alkaline insoluble thermoplastic rubber-based resin and an alkaline reactive polar organic plasticizer along with polar particulate filler materials.

A separator comprising thermoplastic rubber, an inert filler and a processing agent selected from stearic acid, stearic acid metal salts, stearic acid amides, and natural or synthetic waxes is taught in U.S. Patent No. 4,327,164 by Feinberg et al.

In U.S. Patent No. 5,763,557, Sanduja et al graft polymer on the surface of a film of regenerated cellulose by contacting the film with a solution of silver nitrate and an alkali-metal hydroxide. This is followed by contacting the surface with a polymerizable monomer and a catalyst. The polymerization takes place directly on the surface molecules of the substrate.

Similar techniques are used in U.S. Patent No. 5,342,659.

U.S. Patent No. 4,272,470 discloses crosslinking polyvinyl alcohol resin with a polyaldehyde-polysaccharide crosslinking agent that will confer resistance against degradation.

U.S. Patent No. 4,253,927 discloses modifying the surface of

polyethylene film by grafting carboxyl groups onto the surface of the polyethylene film. They act as carriers for ionic charge through the separator material.

U.S. Patent No. 5,426,004 recommends the use of alternating layers of a low density, radiation-grafted polyethylene layer provided adjacent the polyethylene layer. Additional alternating layers of polyethylene and cellophane film can be used. Degradation resistance is a natural consequence as long as the degree of grafting is a small fraction of the bulk polymer.

The Commissioner is hereby authorized to charge payment of any patent assignment recording fees under 37 CFR 1.17 or credit over-payment to Deposit Account No. 10-0192. A duplicate copy of this sheet is attached.

Respectfully submitted,



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#### CERTIFICATE OF MAILING

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